Melanie E. Peffer, Ph.D.

www.biologyeverywhere.com

BIOLOGY EDUCATION • SCIENCE WRITER AND EDITOR • SCIENCE COMMUNICATION TRAINER

Multidisciplinary Collaborations | Writing & Editing | Biology Education | Outreach | Research-Driven Innovation

Collaborative, award-winning, and equity-focused science education leader and learning scientist offering extensive experience in program and course planning, project leadership, grant writing, and science communications for traditional and underrepresented audiences (students, educators, and the general public). A committed connector known for building collaborative partnerships with diverse groups, including faculty, researchers, key stakeholders, donors, and community organizations. Able to leverage years of teaching and public speaking to lead teams, articulate strategic vision, set goals, and supervise deliverables. Extensive track record in promoting inclusion, ethical teaching, trust-based relationships, and psychological safety in learning environments to re-engage learners of all ages who have been harmed by science or the misconceptions around it.

> *"I've had the pleasure of working with Dr. Melanie Peffer in bringing her commitment to open and public science education to global audiences through scaled online courses. She is a deeply devoted educator, passionate about making science and scientific thinking accessible to audiences of varying age and experience. She's an innovator working with stakeholders across CU Boulder and beyond to design career-relevant micro-credentials. Dr. Peffer is the best kind of educator: honest, caring, and generous with her abilities, which extend well beyond the classroom and the laboratory."* ***- Christopher Haynes, Coursera, UC Boulder***

— Key Qualifications & Differentiators —

- ***Team Leadership:*** Leverages years of classroom teaching, supervising students in the Peffer research lab, and leading projects to assemble teams of self-starters and lead by example in accessible program design.
- ***Research-based Innovation:*** Brings together a strong knowledge of the field, learning science, and experience at all levels of the education system to write for technical and non-technical audiences.
- ***Collaborative Partnerships & Public Outreach:*** Extensive experience in science education, including at elementary, middle, high school, undergraduate, and graduate levels as both researcher and educator. A consistent track record of award-winning science communications, including world-wide reaching TEDx Talk, blogs, TED-ED lesson, videos, short courses, webinars, seminars, invited lectures, conference talks, podcast appearances, and books, including a new textbook, *Biology for Life: A Practical Guide to Our Living World* (forthcoming in 2025) and *Biology Everywhere: How the science of life matters to everyday life* (2020).
- ***Accessibility Best Practices:*** As a member of an underrepresented group, committed to promoting accessibility, equity, and inclusion in the classroom and the communities through specific, positive, and consistent action. Creates accessible learning spaces and demonstrates empathy and active listening.
- ***Project Management, Budgeting and Grant Proposals:*** Led complex projects like the SCI project, among multiple other communications projects outside the university. Experience completing Institutional Review Board protocols and receiving funding to lead international professional development workshops.
- ***Awards:*** 2021 High Plains Library Foundation Writer in Residence; 2022 CIPA EVVY Gold Winner in both Educational texts and Children's Storybooks.

— Areas of Expertise —

Team Leadership • Writing, Editing & Proofreading • Program Leadership • Program & Project Development
Strategic Planning & Vision • Proposal Development • Budget Management • Grant Writing • Partner Relations
Public Speaking & Outreach • Accessibility Best Practices • Diversity, Equity & Inclusion

— Technologies —

Google Docs, Wix, SPSS, nVivo, Slack, Adobe Creative Suite, Qualtrics, Camtastia, MS Office; R, HTLM, LMS (Canvas, Moodle, Blackboard, Brightspace/D2L, Coursera); scientific databases: gene sequencing data, trace data

PROFESSIONAL EXPERIENCE

UNIVERSITY OF COLORADO, Boulder, CO

CU Boulder is a public research university and the flagship institution of the University of Colorado system.

TEACHING ASSISTANT PROFESSOR/RESEARCH SCIENTIST LEVEL II, HEALTH PROFESSIONS RESIDENTIAL ACADEMIC PROGRAM & INSTITUTE OF COGNITIVE SCIENCE (July 2019 – Present)

Program Leadership:

- Manage multiple research and education projects, including student projects, simultaneously.
- Prepare and submit federal proposals, including NSF and IES grants, to support independent research program. Former Principal Investigator of an NSF grant. Current Principal Investigator of an internal seed award.

Public Speaking & Outreach:

- In 2023, invited by Cengage to write a non-majors biology textbook of tomorrow, *Biology for Life: A Guide to Our Living World*, an inclusive, accessible book for today's students.
- Presented workshops on trauma-informed teaching and teaching the study cycle to promote equitable classrooms (2023).
- Put together a library of content on how the students learn for other faculty to introduce evidence-based strategies into their classrooms.
- In 2020, published *Biology Everywhere: How the Science of Life Matters to Everyday Life*. Presented multiple public talks, media appearances, and spin off content, including a TEDx Talk (*How rethinking biology can positively change your life),* TED-ED lesson (*The artist who won a noble prize…in medicine),* and a children's book, *The Biology Adventurers: On the River*.
- Developed two Coursera Specializations, Biology Everywhere specialization and Science Communication specialization.
- Organized pre-conference workshops on interdisciplinary learning research between the social and hard sciences (2020 International Conference of the Learning Sciences; 2021 National Association of Biology Teachers).

The Health Professions Residential Academic Program (HPRAP):

- Teach Introduction to Cell and Molecular Biology (MCDB 1150), Genetics (MCDB 2150), MCDB 2150 Co-seminar, and Biology and Society (EBIO 1100). FCQs and peer evaluations are consistently excellent.
- Promote research, cooperation, and learning tools to make first-year biology classes more equitable by teaching students how to learn. Design and participate in the student-facing learning lunches, teach special courses, and collect data to provide colleagues with updated teaching recommendations.

Research in Science Learning:

- Plan research, including submission of institutional review board protocols and research design.
- Perform quantitative and qualitative data analysis, as appropriate. Write and disseminate research results to reputable peer-reviewed journals and major conferences.
- Present research findings at international conferences, such as International Conference of the Learning Sciences, Learning Analytics and Knowledge, and European Conference on Technology Enhanced Learning.
- Serve as ad-hoc reviewer for *CBE-Life Sciences Education* and Learning Analytics and Knowledge Conference.
- Gave seminars, including CU's Institute of Cognitive Sciences seminar series in October 2019, CU's DBER seminar series, and CU's Center for STEM Learning annual symposium.
- In 2023, won a $50K internal seed award grant to support research on using technology to tease out students' beliefs about sciences. Currently supporting two students on this grant.

Teaching and Mentoring:

- Lead by example in evidence-based instruction, including introducing real-world, collaborative learning.
- Assist with programming and student support; mentor three undergraduate students; contribute to learning lunches; supervise undergraduate research assistants; co-author papers with student mentees.
- Serve as mentor for CU's Women in Science and Engineering (WiSE) Mentoring Program.
- Mentor 2-3 students at a time on their honors thesis projects.

- Supervised 6 undergraduate learning assistants and 6 sections of MCDB 2152 (Genetics Co-seminar) in 2020.
- Achieved students average FCQ rating for inclusivity (Q9) of 4.9/5 through a strong commitment to inclusive practices in the classroom, including presenting diverse cultural perspectives.
- Supported students' grant proposals. In 2023, all three mentees won Undergraduate Research Opportunities Program (UROP) fellowships.

BIOLOGY EVERYWHERE PROJECT, Boulder, CO (March 2020 – Present)
FOUNDER, INDEPENDENT CONSULTANT

Public Outreach, Communications & Events:

- Leverage expertise in molecular biology and the learning sciences to create and deliver workshops and communications for the general public, national labs, teachers, and K12 and higher education students on how people learn, understand, and engage with science content.
- Founded www.biologyeverywhere.com, a platform to promote the 2020 trade book *Biology Everywhere: How the Science of Life Matters to Everyday Life* with a blog and online content helping general public engage with biology material, overcome negative biases, and build positive associations with biology content.
- Provided community outreach to empower general public to engage with science and biology issues in their daily lives, including interactive talks, TV and radio interviews, blog, videos, and guest teaching.
- Launched Massive Open Online Course (MOOC) based on *Biology Everywhere* that offers continuing education units and/or graduate credit to worldwide community.
- In 2023, delivered workshops for undergraduate science students on how to write for the general public.
- Created the story line and designs for a ghost-written educational kit for K12 students.
- Successfully engaged hundreds of students for two continuous seasons at the High Plains Library District's Youth Engineering and Science Festival – YES!fest (set up a table and created activities of the attendees).
- Wrote a variety of blogs translating cutting-edge molecular biology research for a general audience (2021-2023).
- Worked with multiple community partners including Denver Museum of Nature and Science, S. Christa McAuliffe STEM Academy, Fort Collins Museum of Discovery, and High Plains Library District on a variety of student-facing activities.

UNIVERSITY OF NORTHERN COLORADO, Greeley, CO
Founded in 1889, the University of Northern Colorado is a public research university with six colleges and 12,000 students.
ASSISTANT PROFESSOR, SCHOOL OF BIOLOGICAL SCIENCES (July 2016 – August 2019)

Taught Non-Majors Biology (F2F and Online), Cell Physiology (F2F and Online), Current Topics in Biology Education Research, and developed Educational Psychology for the Biology Educator. Led a lab group of five, focusing on students' science epistemology when engaged in authentic science inquiry and cognitive underpinnings of genetics understanding. Assisted the faculty in applying evidence-based practices in classroom teaching. As one of two biology education specialists, trained the faculty on educational technologies/learning analytics and gave two talks to the larger university community: on learning analytics and technology-based assessment. Advised eight Biology majors. Supervised and mentored one doctoral and five undergraduate students, many of them published and award-winning. Consistently produced peer-reviewed research manuscripts. Developed evaluation and assessment strategies to monitor student progress and designed learning materials in a variety of formats.

Program Leadership:

- Submitted NSF proposals to lead and facilitate teaching programs and research projects.
- Led the Science Classroom Inquiry (SCI) project. SCI is a webapp designed to give students (middle, high, college) an authentic science inquiry experience within a traditional classroom.
- SCI as an assessment tool evaluates what students know and believe about science and how science knowledge is generated by looking at what they do when engaged with authentic science inquiry.
- With a web developer, revised SCI to streamline data collection and improve the user experience.

Research in Science Learning:

- Research focused on authentic science experiences for students, from elementary through adult. Developed scientific learning materials for diverse audiences.
- As a presenter and visiting lecturer, represented the department during the talks at University College London, University of Hawaii, Learning Analytics and Knowledge Conference (2017, 2019), International Conference of the Learning Sciences (2018), European Association for Research on Learning and Instruction (2016), Conference at the Interface of Discipline-Based Education Research in STEM and Psychological Science (2018), and Gordon Research Conference on Undergraduate Biology Education (2019).

Educational Technologies:

- Regularly used a variety of teaching modalities in F2F classes: Youtube, Google Docs, case studies.
- In 2017-2018, implemented www.melaniepeffer.com/sci currently used in several classes.
- Developed two online courses that met and passed Quality Matters Certification. Delivered them via LMS.

Awards and Special Projects:

- Awarded research grants (a total value of $12,200).
- Expanded the School of Biological Sciences' social media presence to Twitter, Facebook, and LinkedIn; centralized posting via HootSuite. Achieved 18,291 Twitter engagements in the fall 2018.
- Working with colleagues from CSU and CU Boulder, planned a 1.5-day workshop on learning analytics.

GEORGIA STATE UNIVERSITY, Atlanta, GA

Georgia State University is a public research university with seven campuses in metro Atlanta area serving 51,000 students.

POSTDOCTORAL ASSOCIATE (2014 – 2016)

- Received $2,400 in funding and developed independent research program based on SCI Simulations.
- Taught online courses: Educational Psychology (focus: learning and teaching) and Human Growth & Development.
- Supervised and mentored six undergraduate students, served as the evaluator for Atlanta Science Festival events sponsored by Georgia State University and led a team of volunteers for evaluation.
- As a guest speaker, led workshops on online content delivery at GSU.
- Communicated science concepts to the general public through two articles on PBS Science of Learning Blog and interview on UrbanEd podcast.

PITTSBURGH ZOO and PPG AQUARIUM, Pittsburgh, PA

EDUCATION DEPARTMENT INTERN (2012 – 2014)

- Taught middle and high school students enrolled in KidScience and ZooU informal educational programs.
- Developed two high school courses. Launched independent research program at the Zoo, which resulted in two peer-reviewed research publications and receipt of a $5,000 Google Community Grant.

UNIVERSITY OF PITTSBURGH, Pittsburgh, PA

GRADUATE RESEARCH ASSISTANT, MOLECULAR BIOLOGY (2010 – 2014)

- Completed a Ph.D. in Molecular Biology in four years with two first author research manuscripts and one first author review. Collaborated extensively with scientists and physicians. Mentored 4 students.

EDUCATION

Postdoctoral Appointment in Learning Sciences • Georgia State University, Atlanta, GA, 2014-2016

Doctor of Philosophy in Molecular Biology • University of Pittsburgh, Pittsburgh, PA, 2014

Recipient of a competitive NIH Pre-doctoral Fellowship, Training Program in Pharmacological Sciences

Bachelor of Science in Molecular Biology • University of Pittsburgh, Pittsburgh, PA, 2009

PROFESSIONAL DEVELOPMENT

Small Changes, Big Impact: Summer Teaching and Assessment Institute • University of Colorado • 2021
Mastery-Based Learning • University of Colorado • 2020
Utilizing your syllabus as a tool for equity and inclusion • University of Colorado • 2020
Dialogic Practices Workshop • University of Colorado • 2020
CU Women Succeeding in STEM • University of Colorado • 2020
Open Education Resources Workshop • University of Colorado Boulder • 2020
Quantitative Ethnography • Preconference workshop, International Conference of the Learning Sciences • 2018
Collaborative Institutional Training Initiative (CITI) Program • Online, 2018
Research Ethics and Compliance Training, citiprogram.org. Completed training in Conflicts of Interest, Responsible Conduct of Research (Education, social, and behavioral sciences), and Social and Behavioral Research Investigators
Basics of Online Learning and Teaching • Center for the Integration of Research, Teaching, and Learning (CIRTL), 2015
Teaching Academy Online • University of Northern Colorado, 2016
Speaking of Science and Translating Science • University of Pittsburgh, 2013-2014
Two-semester course in communicating science to variety of audiences and media

LEADERSHIP IN PROFESSIONAL ASSOCIATIONS

Editor, BRIDGES Blog, 2020-2021
Co-editor NEXUS:A Learning Analytics Blog, Society for Learning Analytics Research, 2020-2022
Marketing and Communications Committee Member, Association for Science Communicators, 2022-Present
Communications Committee Member, International Society for the Learning Sciences, June 2020-2022
Team Mentor, Quantitative Ethnography COVID19 Data Challenge, April 26-May 3 2020
Communications Committee Member, Society for Learning Analytics and Research, 2019-Present
Organize and host the new webinar and podcast series
Member, International Society of the Learning Sciences, 2015-Present
Member, Society for Advancement of Biology Education Research, 2017-Present
Professionally Trained Student Mentor, Entering Mentoring Program, University of Pittsburgh, Pittsburgh, PA, 2014
Students won a full scholarship to go to NCUR and several travel awards as well as co-authored research papers.
Founding President, Postdoctoral Network, Georgia State University, Atlanta, GA
Founding Member, Metro Atlanta Postdocs (MAP)
Actively contributed as an organizer of the inaugural event at GSU

AWARDS

2022 • STEM Advocacy Network fellowship
2022 • Won Gold at the CIPA EVVY awards in each respective category for *Biology Everywhere* and *On the River*
2021 • High Plains Library District Foundation's 2021 Writer in Residence
2021 • Nominated for best poster paper, International Conference of Quantitative Ethnography
2019 • Voted alumnus of the month by the Gamma Omega chapter of Tau Beta Sigma at the University of Pittsburgh
2017 • Nominated for best paper (top 5%), Learning Analytics and Knowledge Conference
2016 • Data Consortium Fellowship
2015 • Selected among 13 participants for Early Career Workshop by Computer Supported Collaborative Learning
2015 • Travel Grant (one of 15 awardees), National Postdoctoral Association Meeting, Baltimore, MD
2011-2013 • Pre-doctoral Fellowship, NIH T32-GM008424, Pharmacological Sciences, University of Pittsburgh

VOLUNTEERING

Volunteer (developed biology materials for the teachers; led presentations), **Career Day Presenter**, S. Christa Mcauliffe S.T.E.M. Academy, 2023
Presenter, High Plains Library District Youth Science and Engineering Festival, 2022-2024
Committee Letter Interviewer, University of Colorado Boulder, 2021-Present
Mentor, Women in Science and Engineer Mentoring Program, 2019

Consultant for Pre-K Science Programs, High Plains Library District, 2018-Present
Volunteer, communications and organizational aspects, Circle of Life which provides support to grieving children after loss or incarceration of a parent, 2019-Present
Community Adult Outreach, Connecting Science and Faith, Various Methodist churches, 2014-Present
Science Fair Judge (Elementary-High School), Various locations, 2012-Present
Evaluation Chair, Atlanta Science Festival, 2015 & 2016
Volunteer Consultant, High Plains Library District's Early Literacy Programming
Volunteer Speaker, Greeley 500 Women Scientist's Pod Science Salon: Women Scientists Sharing their Stories
Volunteer Judge, University Wide Research Day, Volunteer Science Fair Judge at Long's Peak Science

ADDENDUM: PUBLICATIONS & GRANTS

Research on Learning:

1. The Look Again Quilt: Traditional Media with an Interactive Experience (Accepted) 2025 Public Communication of Science and Technology Network Conference in Aberdeen, Scotland).
2. Five Skills for Fostering Justice in SciComm Through Audience Connection (Accepted) 2025 Public Communication of Science and Technology Network Conference in Aberdeen, Scotland).
3. The Practitioner Perspective: Reducing Research-practice Tensions Through New Funding Schemes (Accepted) 2025 Public Communication of Science and Technology Network Conference in Aberdeen, Scotland).
4. Tomlinson, A., Barbic, G., and **Peffer, M**. (2024). Different Sub-domains of Biology May Be Influencing Practices in Simulated Authentic Science Inquiry. International Society of the Learning Sciences Conference. Buffalo, NY, USA.
5. **Peffer, M**. (2024). Learning Engineering for the Professional Science Communicator. International Society of the Learning Sciences Conference. Buffalo, NY, USA.
6. Daniel, K. L., McConnell, M., Schuchardt, A., & **Peffer, M. E**. (2022). Challenges facing interdisciplinary researchers: Findings from a professional development workshop. *Plos one*, *17*(4), e0267234.
7. Tsai, Y. S., **Peffer, M**., Shibani, A., Hilliger, I., Chen, B., Fan, Y., ... & Knight, S. (2022). Writing for Publication: Engaging Your Audience. *Companion Proceedings of the 12th*, 169.
8. Ruipérez-Valiente, J. A., Staubitz, T., Jenner, M., Halawa, S., Zhang, J., Despujol, I., ... & Reich, J. (2022). Large scale analytics of global and regional MOOC providers: Differences in learners' demographics, preferences, and perceptions. *Computers & Education*, *180*, 104426.
9. Knight, J. K., Weaver, D. C., **Peffer, M. E.,** & Hazlett, Z. S. (2022). Relationships between Prediction Accuracy, Metacognitive Reflection, and Performance in Introductory Genetics Students. *CBE—Life Sciences Education*, *21*(3), ar45.
10. Hobbs, W., **Peffer, M.,** Sanchez, D., Zorgo, S.* (2021). Network Analysis of COVID19 Tweets between Donald Trump and Center for Disease Control Twitter. *International Conference for Quantitative Ethnography.*
11. Hobbs, W., Kaliisa, R., Misiejuk, K., Peffer, M., et al*. (2021) Challenges and Solutions to Examining Twitter Data: Reflections from the QE-COVID19 Data Challenge. *International Conference for Quantitative Ethnography*
12. **Peffer, M.,** & Youmans, T. (2020) Simulation Based Assessment of Epistemological Beliefs about Science. *Proceedings of the European Conference on Technology Enhanced Learning*.
13. **Peffer, M.,** Ramezani, N., Quigley, D., Royse, E., & Bruce, C. (2020). Assessing epistemological beliefs about science using computer-based inquiry in biology. *CBE-Life Sciences Education* Link to full text.
14. Royse, E., Sutton, E., Peffer, M., Holt, E. (2020). The Anatomy of Persistence: Remediation and Science Identity Perceptions in Undergraduate Anatomy and Physiology. *International Journal of Science Education.* Link to full text
15. **Peffer, M.,** & Youmans, T. (2020) Students with sophisticated epistemological beliefs about source, but not certainty, of science knowledge revise hypotheses more frequently in authentic science inquiry. *International Conference of the Learning Sciences.* Nashville, Tennessee, USA: Vanderbilt University.
16. Dolan, E. L., Borrero, M., Callis-Duehl, K., Musgrove, M. M. C., de Lima, J., Ero-Tolliver, I., ... & Herrera, J. (2020). Undergraduate Biology Education Research Gordon Research Conference: A Meeting Report. *CBE—Life Sciences Education*, *19*(2), mr1. Link to full text
17. **Peffer, M**., Quigley, D., Brusman, L., Avena, J., Knight, J., (2020). Trace Data from Student Solutions to Genetics Problems Reveals Variance in the Processes Related to Different Course Outcomes. *Proceedings of the Tenth International Learning Analytics & Knowledge Conference* Frankfurt am Main, Germany, (31% Acceptance Rate)

18. **Peffer, M.** & Sutton, J. (2020). A Qualitative Analysis of One University's Ethical Fears and Practical Desires for Learning Analytics *Companion Proceedings of the Tenth International Learning Analytics & Knowledge Conference* Frankfurt am Main, Germany.
19. **Peffer, M.,** Renken, M., Enderle, J., Cohen, J. (2019) Mission to Planet Markle: Problem Based Learning for Teaching Elementary Students Difficult Content and Skills. *Research in Science Education*. Link to full text
20. **Peffer, M.,** & Ramezani, N. (2019) Assessing Epistemological Beliefs of Experts and Novices via Practices in Authentic Science Inquiry. *International Journal of STEM Education*. Link to full text
21. **Peffer, M.,** Quigley, D., Mostowfi, M. (2019). Clustering Analysis Reveals Authentic Science Inquiry Trajectories Among Undergraduates. *Proceedings of the Ninth International Learning Analytics & Knowledge Conference* Tempe, Arizona, USA: University of Arizona. (32% acceptance rate) Link to full text
22. **Peffer, M.,** Royse, E., Abelein, H. (2018). Influence of Affective Factors on Practices in Simulated Authentic Science Inquiry. *International Conference of the Learning Sciences.* London, England. (27% Acceptance Rate) Link to full text
23. **Peffer, M.,** Kyle, K. (2017). Assessment of Language in Authentic Science Inquiry Reveals Putative Differences in Epistemology. *Proceedings of the Seventh International Learning Analytics & Knowledge Conference* (pp. 138-142) Vancouver, Canada: Simon Fraser University. (34% acceptance rate) (**Best paper nominee**) Link to full text
24. **Peffer, M.,** Beckler, M, Schunn C, Renken M, Revak A. (2015) Science Classroom Inquiry (SCI): A Novel Simulation to Scaffold Science Learning. *PloS one, 10*(3). Link to full text.
25. **Peffer, M** & Renken, M. (2015). Science Classroom Inquiry (SCI) Simulations for Generating Group-Level Learner Profiles. *Exploring the Material Conditions of Learning: The Computer Supported Collaborative Learning (CSCL) Conference 2015, Volume 2*. (pp. 707-708) Gothenburg, Sweden: University of Gothenburg. (45% acceptance rate) Link to full text

*author names listed in alphabetical order; **Bold text** indicates senior author.

Essays, Monographs, Workshops, and Educational Materials (Peer Reviewed):

1. **Peffer, M**. Case Study: *Can we risk it again? Genetics and Recurrent Pregnancy Loss*. (2023). NSTA Case Study collection.
2. **Peffer, M.** Daniel, K., Schuchardt, A. (2020). *Workshop for Facilitation of Interdisciplinary Research Collaborations Between Discipline Based Education Research in Biology and the Learning Sciences*. (Preconference workshop) *International Conference of the Learning Sciences.* Nashville, Tennessee, USA: Vanderbilt University.
3. **Peffer, M**. (2018). Combining Multimodal Learning Analytics with Backward Design to Assess Learning. Workshop Proceedings of the International Learning Analytics and Knowledge conference. Link to full text
4. **Peffer, M**. & Renken, M. (2016) Practical Strategies for Collaboration Across Discipline-Based Education Research and Learning Sciences. *CBE-Life Science Education*. Link to full text
5. Renken, M., Peffer, M., Otrel-Cass, K., Girault, I., Chiocarriello, A. (2016) *Simulations as Scaffolds in Science Education.* Association for Educational Communication and Technology (AECT) Books and Briefs Series. Springer Publishing. Link
6. **Peffer, M.E.** (2015) A Synergistic Approach to Studying Computer Supported Collaborative Authentic Inquiry and Genetics Understanding in K12 Students. *Exploring the Material Conditions of Learning The Computer Supported Collaborative Learning (CSCL) Conference 2015*, Volume 2. (pp. 914-915) Gothenburg, Sweden: University of Gothenburg [Please e-mail if you would like a copy]

Writing for the General Public:

1. Peffer, M. (2025). Butterflies, Caterpillars and Rethinking Biology Education. (Forthcoming)
2. Peffer, M. (2023). Walking through rainbow storms in pregnancy after loss. Pregnancy After Loss Support Online Magazine. Link to Full Text.
3. Peffer, M. (2022). What does it really mean to 'go green'? Cultrico. Link to Full Text.
4. Peffer, M. (2021). (Molecular) Biology Everywhere. Lifeology Blog. Link to Full Text.
5. Peffer, M. (2021). Dressing the Part. BioGirls Blog. Link to Full Text
6. Peffer, M. (2020). *Biology Everywhere: How the science of life matters to everyday life*. MKPEF4.
7. Peffer, M. (2020). Talking about science in a pandemic: A golden opportunity for science communication. PLOS SciComm Blog. Link to full text.

8. Peffer, M. (2020). I have learned to hate science. Guest Commentary, *The American Biology Teacher*. Link to full text.
9. Peffer, M. (2020). Reaching outside the classroom: Connecting science to daily life and other disciplines. The Educator's Corner Blog. Link to full text
10. Buckingham-Shum, S. & Peffer, M. (2020) Welcome to NEXUS: a learning analytics blog! Society for Learning Analytics Research (SoLAR) NEXUS blog. Link to full text.
11. Peffer, M. (2020). A Learning Engineer's Angle on Learning Analytics (Interview with Bror Saxberg). Society for Learning Analytics Research (SoLAR) NEXUS blog. Link to full text.

Molecular Biology Research:

1. *Frahm, K., *Peffer, M., Zhang, J., Luthra, S., Chakka, A., & Defranco, D. B. (2015) Dexamethasone Treatment of Hypothalamic Neural/Progenitor Stem Cells Causes Sex-Specific Changes in Gene Expression. *Molecular Endocrinology*. *co-first authors Link to Full Text

2. *Peffer, M.E., *Zhang, J.Y., Umfrey L, Rudine, A., Monaghan-Nichols, A., DeFranco, D.B. (2015). Minireview: The Impact of Antenatal Therapeutic Synthetic Glucocorticoids on the Developing Fetus. *Molecular Endocrinology*. *co-first authors Link to Full Text

3. **Peffer, M. E., Chandran, U.R. Luthra, S., Volonte, D., Galbiati, F., & DeFranco, D.B. (2014). Caveolin-1 Regulates Genomic Action of the Glucocorticoid Receptor in Neural Stem Cells. *Molecular and Cellular Biology*, MCB-01121. **This paper featured in MCB spotlight Link to Full Text

GRANT WRITING

Funded Projects

2023 Peffer, M. (2023) Research and Innovation Office Seed Award ($49,937)
2022 Peffer, M. (2022) Arts and Sciences Fund for Excellence Award ($450)
2021 Quigley, D. & Peffer, M. (2021) *Perceptions of science: towards an automated assessment of epistemological beliefs about science*. IRT Seed Grant CU Boulder ($13,496,57)
2021 Peffer, M. (2021) Arts and Sciences Fund for Excellence Award ($945)
2020 Peffer, M. (2020) *Workshop for Facilitation of Interdisciplinary Research Collaborations Between Discipline Based Education Research in Biology and the Learning Sciences*. National Science Foundation (NSF) Research-Coordination Network -Undergraduate Biology Education Workshop Proposal. ($49,745)
2019 Faculty Review and Publications Board Request for Open Access Funds ($700)
2018 Assessment Mini Grant, UNC Community Views: Ethics and Practical Consideration of Learning Analytics for Assessment ($1,500)
2017 Faculty Review and Publications Board Request for Open Access Funds ($700)
2017 Assessing Epistemology in Authentic Science Inquiry (EASI) via Practices in SCI Simulations, Summer Support Initiative, ($7,938.00)
2016 *Data Consortium Fellowship*, Assessment of Language in Authentic Science Inquiry ($1,400)
2015 *Travel Grant Recipient*, to attend the National Postdoctoral Association Meeting, National Postdoctoral Association, Washington DC (one of 15 awardees) ($1,000)
2013 *Google Community Grant Recipient*, #TFR13-02980 The Choose Your Own Science Adventure Project ($5,000)

Unfunded Projects

1. Peffer, M., Sanford, K., Verbecke, M. Think Fast! Enhancing Science Communication Training with Learning Engineering and Improv. National Science Foundation. ($1.4 million)
2. Peffer, M., Coffin, A., Verbecke, M. (2023) Think Fast! Enhancing Science Communication Training with Learning Engineering and Improv. National Science Foundation. ($1,275,842)
3. Peffer, M., Shear, B. Bateman, K. (2022-2025) *Perceptions of science: towards an automated assessment of epistemological beliefs about science*. National Science Foundation (NSF) EHR-CORE Research Program ($1,500,000)
4. Peffer, M. and Bateman, K. (2022-2025) *Perceptions of science: towards an automated assessment of epistemological beliefs about science*. National Science Foundation (NSF) IUSE Research Program ($600,000)

5. Peffer, M. (2021-2024) *Developing a science identity through exploring biology in daily life*. James S. McDonnell Foundation ($250,000)
6. Peffer, M., Bateman, K, and Quigley, D. (2021-2024) *Perceptions of science: towards an automated assessment of epistemological beliefs about science*. National Science Foundation (NSF) EHR-CORE Research Program ($1,500,000)
7. Peffer, M., Schuchardt, A., Daniel, K. (2021-2026) *BRIDGES:Bridging Interdisciplary Gaps in Educational Sciences.* National Science Foundation (NSF) IUSE Program ($2,500,000)
8. Peffer, M. and Caccamise, D. (2021-2024) *Reading where you live: Experiential Learning and building science identity with diverse learners*. National Science Foundation DRK12. $1,700,000
9. Peffer, M. and Caccamise, D. (2021-2024) *Reading where you live: Experiential Learning and building science identity with diverse learners*. Institute of Education Sciences (IES) STEM education Program. $1,989,824
10. Knight, J. & Peffer, M. (2021-2022) *Relationships between Perception, Metacognition and Problem Solving in Undergraduate Genetics Students*. National Science Foundation (NSF) Improving Undergraduate STEM Education (IUSE). $298,331
11. Peffer, M. and Quigley, D. *Learning Analytics Based Assessment of Epistemological Beliefs about Science for Enhancement of Science Literacy in Gateway Biology Laboratory Courses*. National Science Foundation (NSF) Improving Undergraduate STEM Education (IUSE).
12. Peffer, M. *Assessing Epistemology in Authentic Science Inquiry (EASI) via Practices in SCI Simulations* National Science Foundation (NSF) CAREER Program
13. Peffer, M, Schuchardt, A. (Co-PI), Daniels, K. (Co-PI) *Interdisciplinary Biology Education Research Group: Connecting Researchers to Support the Second Generation of Biology Education Research*. National Science Foundation (NSF) Research Coordination Network-Undergraduate Biology Education
14. Peffer, M. *Assessing Epistemology in Authentic Science Inquiry (EASI) via Practices in SCI Simulations* National Science Foundation (NSF) CAREER Program
15. Peffer, M. & Reinsvold, L. *Interdisciplinary Biology Education Research Group: Connecting Researchers to Support the Second Generation of Biology Education Research*. National Science Foundation (NSF) Research Coordination Network-Undergraduate Biology Education
16. Goel, A., Renken, M., Peffer, M., & Leroux, A. Collaborative Research: Scaffolding Learning through Modeling and Simulation. National Science Foundation (NSF) Cyberlearning
17. Renken, M., Goel, A., Leroux, A., Peffer, M. Collaborative Research: Tracing Learner Trajectories through Exploratory Learning Environments. National Science Foundation (NSF) Education and Human Resources Core Research

CONFERENCE PRESENTATIONS, WORKSHOPS & GUEST TALKS

Invited Talks & Seminars:

1. Getting Real with Melanie Peffer: Three life experiences that inspired Biology for Life (2024) Cengage Marketing Conference.
2. The Biology Everywhere Teaching Philosophy and Science Communication (2023). American Chemical Society Two Year Chemistry Consortium Webinar.
3. K12 outreach presentations. Denver Museum of Nature & Science; Fort Collins Museum of Discovery (2023).
4. Why doesn't evidence change people's minds? (2022) Lifeology Webinar.
5. The Biology Everywhere mindset and science communication (2022) Cyprus Biological Society Excellence in Biology Webinar. Republic of Cyprus
6. Biology Everywhere: Integrating experiences as biology education researcher and biology instructor to communicate biology to the general public (2022) University of Colorado Boulder CU on the Weekend Series. Boulder, CO.
7. Biology Everywhere: Integrating experiences as biology education researcher and biology instructor to communicate biology to the general public (2021) University of Minnesota Biology Teaching and Learning Seminar Series. Minneapolis, MN.
8. Biology Everywhere: Integrating experiences as biology education researcher and biology instructor to communicate biology to the general public (2021) BSCS Seminar Series. Colorado Spring, CO.

9. Biology Everywhere: Integrating experiences as biology education researcher and biology instructor to communicate biology to the general public (2021) University of Minnesota Biology Teaching and Learning Seminar Series. Minneapolis, MN.
10. *Biology Everywhere: A book, philosophy, and career pivot, all in one!* (2020) Alternative Careers to Academia. University of Colorado, Boulder, CO. Watch Video Here.
11. *Biology Everywhere: How people learn, understand, and engage with the science of life*. (2020) Interactions of Society and the Environment Seminar Series. Fort Collins, CO. Watch Video Here.
12. *Searchers Celebrate Earth Day: Conservation, Biodiversity, and the Decision to Go Green*. (2020) First United Methodist Church of Loveland, Loveland, CO. Watch Video Here.
13. *Biology Everywhere: A book, philosophy, and career pivot, all in one!* (2020) University of Colorado Nerd Night. (Keynote Speaker)
14. *Assessing epistemological beliefs about science using computer-based inquiry in biology*. (2020) University of Colorado Discipline-Based Education Research Seminar. University of Colorado, Boulder, CO.
15. *Quantifying students' epistemological beliefs about science using simulated inquiry: a multi-pronged approach to a multi-faceted construct.* (2019) Institute for Cognitive Science, University of Colorado, Boulder, CO
16. *Quantifying students' epistemological beliefs about science using simulated inquiry: a multi-pronged approach to a multi-faceted construct.* Institute for Cognitive Science, University of Colorado, Boulder, CO, Fall 2019
17. *STEM and linguistics: Modeling scientific epistemologies using linguistic analysis.* (2018) University of Hawaii (Invited)
18. *An Interdisciplinary Approach to Biology Education Research*, (2016) University College London, London, UK (Invited)
19. *There and back again: A Biologist's Tale*. (2016) Georgia State University, Atlanta GA
20. *Integrating technology into the college classroom*, (2016) Georgia State University, Atlanta GA
21. *The Post-doc Experience*. (2016) Doctoral Student Association Research Conference, Georgia State University, Atlanta, GA
22. *Genome-wide analysis of glucocorticoid action in neural stem cells: implications for the development of neuropsychiatric disorders*. (2014) Oral presentation; Pittsburgh Institute for Neurodegenerative Diseases, University of Pittsburgh, Pittsburgh, PA
23. *Dealing with difficult situations*, New Teaching Assistant Orientation, (2013) University of Pittsburgh, Pittsburgh, PA
24. *The impact of glucocorticoids on the developing brain (Or, how do we relate introductory biology to real world problems?),* (2013) Community College of Allegheny County, Pittsburgh, PA
25. *How can activation of a transcription factor during prenatal brain development causes a neuropsychiatric disorder later in life? Or, how do we relate introductory biology to real world problems?,* (2013) Community College of Allegheny County, Pittsburgh, PA
26. *Rapid versus genomic glucocorticoid receptor signalling: interplay during neural development* (2012) Department of Pharmacology and Molecular Biology Graduate Student Seminar, University of Pittsburgh, Pittsburgh, PA.

Workshops

1. Five Skills for Fostering Justice in SciComm Through Audience Connection (2024). Association for Science Communicator's Science Talk Conference. Portland, OR.
2. Invisible Wounds in the Classroom: Strategies for Trauma-informed Teaching. (2023). University of Colorado Boulder Disability Symposium.
3. Increasing Equity Through Instruction on Evidence-based Learning Strategies Alongside Your Content. (2023) University of Colorado Boulder Center for Teaching and Learning Fall Intensive.
4. Learning Engineering: Applying the science of learning to amplify your science communication endeavors (2022), University of Colorado Boulder Center for Teaching and Learning Workshop
5. Learning Engineering: Applying the science of learning to amplify your science communication endeavors (2022), ScienceTalk '22, Portland, OR.

6. Workshop for Facilitation of Interdisciplinary Research Collaborations Between Discipline Based Education Research in Biology and the Learning Sciences (2021), National Association of Biology Teacher's Professional Development Conference, Atlanta, GA.
7. Workshop for Facilitation of Interdisciplinary Research Collaborations Between Discipline Based Education Research in Biology and the Learning Sciences (2020), International Conference of the Learning Sciences, Nashville, TN.

Conference Presentations:

1. The *Look Again* Quilt: Creative Approaches to Biology Education (2024). Art work presentation at NABT Professional Development Conference, Anaheim, CA.
2. Learning Engineering for the Professional Science Communicator. Poster presentation at the International Society of the Learning Sciences Conference. Buffalo, NY.
3. Learning Engineering: Applying the science of learning to amplify your science communication endeavors. (2022), oral presentation SENCER Summer Institute (Online)
4. Biology Everywhere: Integrating experiences as biology education researcher and biology instructor to communicate biology to the general public. (2022) Oral presentation, SENCER Summer Institute (online)
5. Biology Everywhere: Making SciComm Accessible. (2022). Poster presentation, ScienceTalk Conference, Portland, OR.
6. Biology Everywhere: Easy Activities to Bring the Real World into the Classroom. (2021). Poster Presentation, NABT Professional Development Conference, Atlanta, GA.
7. Investigating epistemological beliefs about science in biological inquiry (2021). Poster presentation, NABT Professional Development Conference, Atlanta, GA.
8. Students with sophisticated epistemological beliefs about source, but not certainty, of science knowledge revise hypotheses more frequently in authentic science inquiry. (2020), Oral Presentation, International Conference of the Learning Sciences Nashville, TN USA/Online.
9. Trace Data from Student Solutions to Genetics Problems Reveals Variance in the Processes Related to Different Course Outcomes. (2020), Oral Presentation, Learning Analytics and Knowledge Conference Frankfurt am Main, Germany/Online.
10. *A Qualitative Analysis of One University's Ethical Fears and Practical Desires for Learning Analytics.* (2020) Poster Presentation, Learning Analytics and Knowledge Conference Frankfurt am Main, Germany/Online.
11. *Quantifying students' epistemological beliefs about science using simulated inquiry: a multi-pronged approach to a multi-faceted construct.* (2019) Poster Presentation, Center for STEM Learning Annual Symposium. Boulder, CO
12. *Quantifying students' epistemological beliefs about science using simulated inquiry: a multi-pronged approach to a multi-faceted construct.* (2019) Poster Presentation, Gordon Research Conference in Undergraduate Biology Education. Lewiston, ME
13. *Practical Strategies for Collaborations across Discipline-Based Education Research and the Learning Sciences.* (2018). Poster Presentation, Conference at the Interface of Discipline-Based Education Research in STEM and Psychological Science. St. Louis, MO.
14. *Influence of Affective Factors on Practices in Simulated Authentic Science Inquiry*. (2018) Oral Presentation, International Conference of the Learning Sciences. London, England. (Peer Reviewed)
15. *Learning Analytics and their Potential Impact on Science Education.* (2018) Oral Presentation, University of Northern Colorado Science Education Symposium.
16. *Rethinking Assessment: Using Authentic Practices in Simulated Environments to Measure Student Beliefs about Science* (2018) Oral Presentation, Third Annual Higher Education Flipped Learning Conference. University of Northern Colorado, Greeley CO.
17. *Combining Multimodal Learning Analytics with Backward Design to Assess Learning*. (2018) Poster presentation, Learning Analytics and Knowledge Conference. Sydney, Australia (Peer Reviewed).
18. *Assessment of Language in Authentic Science Inquiry Reveals Putative Differences in Epistemology.* (2017) Oral presentation, Learning Analytics and Knowledge Conference. Vancouver, Canada (Peer Reviewed)

19. *SCI simulations: Computer-Based Simulations for Assessing Students' Epistemology during Authentic Science Inquiry*. (2016) Oral presentation. European Association for Research on Learning and Instruction. Ghent, Belgium. (Peer Reviewed)
20. *A learning analytics approach to studying students' science epistemologies*. (2016) Poster presentation; Atlanta Computational Social Science Conference, Atlanta, GA.
21. *Science Classroom Inquiry (SCI) Simulations for Generating Group-Level Learner Profiles*. (2015) Poster presentation; 2015 Conference in Computer Supported Collaborative Learning. Gothenburg, Sweden (Peer Reviewed)
22. *Mission to Planet Markle: Analysis of Elementary Students' Arguments Made Visible as Products.* (2015) Oral Presentation; Argument Based Inquiry Conference, Spokane, WA
23. *Learning Outcomes of Genetics-Themed Problem-Based Learning Unit Delivered to Elementary School Students.* Round Table Presentation; Society for Advancement of Biology Education Research. Minneapolis, MN
24. *Communication Etiquette*, (2014) NET/Work, Georgia State University, Atlanta, GA
25. *The Choose Your Own Science Adventure Project.* (2014) Oral presentation; LearnLab's annual Learning Science Workshop, Pittsburgh, PA
26. *Caveolin-1 Regulates Genomic Action of the Glucocorticoid Receptor in Neural Stem Cells.* (2013)
27. Poster presentation; Pittsburgh Area Nuclear Receptor Conference, Pittsburgh, PA
28. *Caveolin-1, a novel mediator of genomic and non-genomic glucocorticoid receptor signaling in embryonic neural progenitor/stem cells.* Poster presentation; Endocrine Meeting June 2013. San Francisco, CA (2013) *(See Published Abstracts)*
29. *Caveolin-1, a novel mediator of classical/genomic and non-classical/rapid glucocorticoid receptor signaling in neural progenitor/stem cells.* Poster presentation; Great Lakes Nuclear Receptor Conference, 2012. Chicago, IL (2012) *(See Awards and Honors)*
30. *Caveolin-1, a novel mediator of classical/genomic and non-classical/rapid glucocorticoid receptor signaling in neural progenitor/stem cells.* Poster presentation; Science2012 Conference, 2012. Pittsburgh, PA (2012) *(See Published Abstracts)*